Install Flares

Partner Reported Opportunities (PROs) for Reducing Methane Emissions

PRO Fact Sheet No. 905

Applicable sector(s):

- ■ Production
- ☐ Processing
- ■ Transmission and Distribution

Partners reporting this PRO: Chevron U.S.A. Production Company (now ChevronTexaco Corporation), ExxonMobil Production Company, Louisville Gas and Electric Company, Marathon Oil Company

Other related PROs: Install Electronic Flare Ignition Devices

- Compressors/Engines ☐
- Dehydrators ☐
- Pipelines ☐
- Pneumatics/Controls ☐
- Tanks ☐
- Valves ☐
- Wells ☐
- Other ■

Technology/Practice Overview

Description

Remote, unmanned production sites and compressor stations may vent low-pressure natural gas and vapors from storage tanks and other onsite equipment to the atmosphere. These gases, which contain methane and often volatile organic compounds (VOC), hydrogen sulfide, and hazardous air pollutants (HAP), can pose an environmental, health, and safety hazard. In order to reduce these emissions, partners have reported installing flares to combust these gases instead of venting them to the atmosphere.

Methane Savings: 2,000 Mcf per year

Costs

Capital Costs (including installation)

☐ <$1,000 ☐ $1,000 – $10,000 ■ >$10,000

Operating and Maintenance Costs (annual)

☐ <$100 ☐ $100-$1,000 ■ >$1,000

Payback (Years)

None

Benefits

Reducing methane emissions was an associated benefit of the project.

Partners have applied flaring technology typically consisting of a small flare stack with one or two pilots. Emissions sources, such as tank vents, compressor blowdown lines, low-pressure separator vents, overpressure relief valves, and other vent streams are piped directly to the flare.

Operating Requirements

If the heat content of the stream is below 300 Btu per scf, auxiliary fuel is needed. The average pilot gas consumption is 70 scf per hour per pilot burner.

Applicability

Flares can be applied to all point source vented emissions of combustible gas with minimal sulfur content.

Methane Emissions Reductions

The methane emissions reduction is uniquely dependent on the types and sizes of sources and the methane content of the flared gas. Wellhead gas may range from 70 to 90 percent methane while crude oil production tank vapors may be as low as 50 percent methane. Partners have reported production site application for tank vents, relief valves, and compressor blow-down at 2,000 Mcf per year, low-pressure separators at 4,000 Mcf per year, and condensate tanks at 36,000 Mcf per year.

Economic Analysis

Basis for Costs and Savings

Methane emissions reductions of 2,000 Mcf per year apply to a single flare with a single pilot. Costs are for a flare stack 30 feet high and 10 inches in diameter. Average annual gas loading is assumed at 2,000 Mcf.

Discussion

Flares are commonly installed on higher-pressure blowdown or emergency pressure relief valves for safety reasons. Low-pressure gas installations have been justified by environmental emissions control. There are no revenues from the gas as it is destroyed through combustion, and there is a fuel cost of $1,800 per year for each pilot (at $3 per Mcf of gas).